Tel : 82-32-817-4325
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Resistors And
Resistive Applications

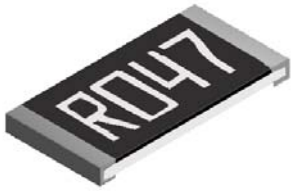
# CSTN

## Thin Film Current Sensing Chip Resistor

RoHS COMPLIANT

■**Features**
- Thin film process
- High power rating up to 3 watts in 2512 size
- Tight tolerance down to ±0.5%
- Extremely low TCR down to ±50 PPM/℃
- Resistance values from 50m to 1ohm
- High purity alumina substrate for high power dissipation

■**Applications**
- Power Management Applications
- Switching Power Supply
- Over Current Protection in Audio Applications
- Voltage Regulation Module(VRM)
- DC-DC Converter, Battery Pack, Charger, Adaptor
- Automotive Engine Control
- Disk Drive
- Portable Devices(PDA, Cell Phone)




## GENERAL SPECIFICATIONS

| Model | Power Rating | Operating Temp. Range | Resistance Range[mΩ] | | TCR[PPM/℃] |
|---|---|---|---|---|---|
| | | | ±0.5% | ±1% | |
| CSTN02(0402) | 1/16W | -55 ~ +155℃ | 500 ~ 1000 | | ±100<br>±50 |
| CNTN03(0603) | 1/10W | | 200 ~ 300<br>301 ~ 1000 | | ±100<br>±50 |
| CSTN05(0805) | 1/8W | | 200 ~ 300<br>301 ~ 1000 | | ±100<br>±50 |
| CSTN06(1206) | 1/4W | | - | 50 ~ 100 | ±200 |
| | | | 101 ~ 300<br>301 ~ 1000 | | ±100<br>±50 |
| CSTN10(2010) | 3/4W | | 50 ~ 100<br>101 ~ 300<br>301 ~ 1000 | | ±200<br>±100<br>±50 |
| CSTN12(2512) | 1W | | 50 ~ 100<br>101 ~ 300<br>301 ~ 1000 | | ±200<br>±100<br>±50 |

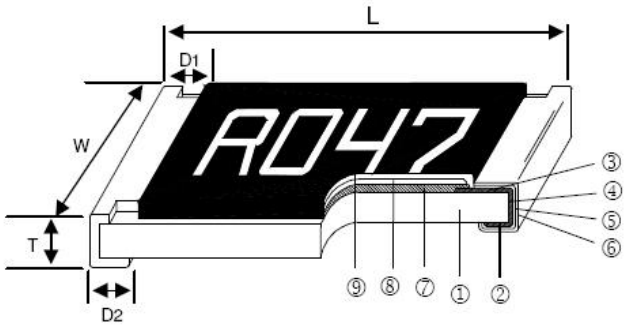
## CHARACTERISTICS

Values in [ ] mean charge in Ω after test

| | | |
|---|---|---|
| Temp. Coefficient of Resistance | As Spec | +25/-55/+25/+125/+25℃ |
| Short Time Overload | ±1% | RCWV*2.5 or Max. Overloading Voltage, 5sec. |
| Insulation Resistance | >1000MΩ | Apply 100VDC for 1minute |
| Endurance | ±1% | 70±2℃, Max. working voltage for 1000hrs with 1.5 hrs "ON" and 0.5hrs "OFF" |
| Damp Heat with Load | ±0.5% | 40±2℃ 90~95% R.H. Max. working voltage for 1000hrs with 1.5hrs "ON" and 0.5hrs "OFF" |
| Bending Strength | As Spec | Bending amplitude 3mm for 10sec. |
| Solerability | 95%min coverage | 245℃±5℃, 2±0.5sec |
| Resistance to Soldering Heat | ±0.5% | 260±5℃, 10±1sec |
| Dielectric Withstand Voltage | By Type | Apply Max. Overload Voltage for 1minute |
| Thermal Shock | ±0.5% | -55℃ ~ 150℃, 100 cycles |
| Low Temperature Operation | ±0.5% | 1 hours, -65℃ followed by 45 minutes of RCWV |

## DIMENSIONS

Unit : mm



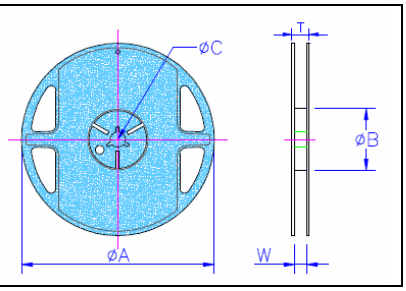

| | |
|---|---|
| ① | Alumina Substrate |
| ② | Bottom Electrode(Ag) |
| ③ | Top Electrode(Ag-Pb) |
| ④ | Edge Electrode(NiCr) |
| ⑤ | Barrier Layer(Ni) |
| ⑥ | External Electrode(Sn) |
| ⑦ | Resistor Layer(NiCr) |
| ⑧ | Overcoat(Epoxy) |
| ⑨ | Marking |

| Model | Size(Inch) | L | W | T | D1 | D2 | Weight(g) (1000pcs) |
|---|---|---|---|---|---|---|---|
| CSTN02 | 0402 | 1.00±0.05 | 0.50±0.05 | 0.32±0.10 | 0.25±0.10 | 0.20±0.10 | 0.56 |
| CSTN03 | 0603 | 1.60±0.10 | 0.80±0.10 | 0.45±0.10 | 0.30±0.20 | 0.30±0.20 | 3.1 |
| CSTN05 | 0805 | 2.00±0.15 | 1.25±0.15 | 0.55±0.10 | 0.30±0.20 | 0.40±0.25 | 5.6 |
| CSTN06 | 1206 | 3.05±0.15 | 1.55±0.15 | 0.55±0.10 | 0.50±0.30 | 0.40±0.25 | 12.3 |
| CSTN10 | 2010 | 5.00±0.20 | 2.45±0.15 | 0.60±0.15 | 0.60±0.30 | 0.50±0.25 | 26.7 |
| CSTN12 | 2512 | 6.35±0.20 | 3.15±0.15 | 0.60±0.10 | 0.60±0.30 | 0.55±0.25 | 49.6 |

## REEL SPECIFICATIONS

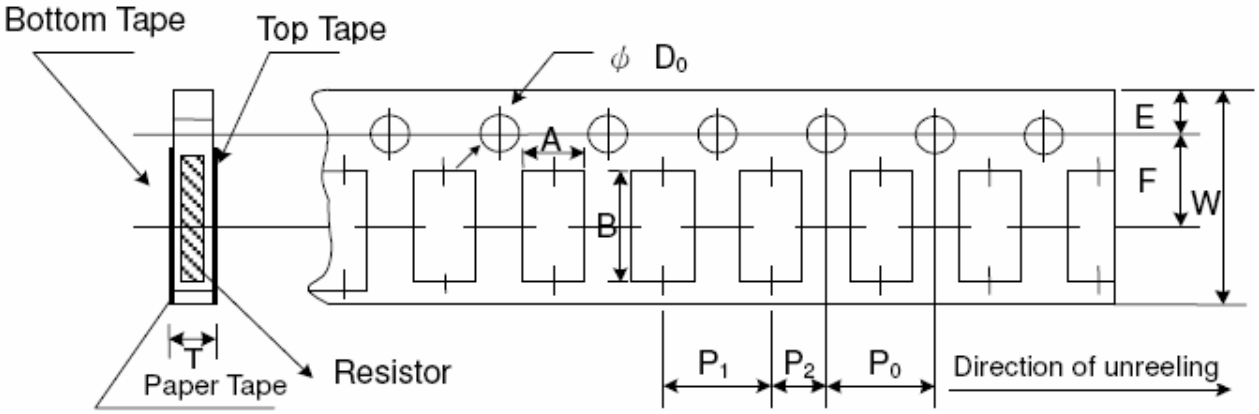
Unit : mm

| Model | Dimension[mm] | | | | | Paper Tape[pcs] | Emboss Plastic Tape[pcs] |
|---|---|---|---|---|---|---|---|
| | ΦA | ΦB | ΦC | W | T | | |
| **CSTN02** | 178±1.0 | 60±1.0 | 13.5±0.7 | 9.5±1.0 | 11.5±1.0 | 10,000 | - |
| **CSTN03** | 178±1.0 | 60±1.0 | 13.5±0.7 | 9.5±1.0 | 11.5±1.0 | 5,000 | - |
| **CSTN05** | 178±1.0 | 60±1.0 | 13.5±0.7 | 9.5±1.0 | 11.5±1.0 | 5,000 | - |
| **CSTN06** | 178±1.0 | 60±1.0 | 13.5±0.7 | 9.5±1.0 | 11.5±1.0 | 5,000 | - |
| **CSTN10** | 178±1.0 | 60±1.0 | 13.5±0.7 | 9.5±1.0 | 15.5±1.0 | - | 4,000 |
| **CSTN12** | 178±1.0 | 60±1.0 | 13.5±0.7 | 9.5±1.0 | 15.5±1.0 | - | 4,000 |




## PAPER TAPE SPECIFICATIONS

Unit : mm




| Model | Dimensions[mm] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | W | E | F | P0 | P1 | P2 | ΦD0 | T |
| **CSTN02** | 0.70±0.05 | 1.16±0.05 | 8.00±0.10 | 1.75±0.05 | 3.5±0.05 | 4.00±0.10 | 2.00±0.05 | 2.00±0.05 | 1.55±0.05 | 0.40±0.03 |
| **CSTN03** | 1.10±0.05 | 1.90±0.05 | 8.00±0.10 | 1.75±0.05 | 3.5±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.55±0.05 | 0.60±0.03 |
| **CSTN05** | 1.60±0.05 | 2.37±0.05 | 8.00±0.10 | 1.75±0.05 | 3.5±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.55±0.05 | 0.75±0.05 |
| **CSTN06** | 2.00±0.05 | 3.55±0.05 | 8.00±0.10 | 1.75±0.05 | 3.5±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.55±0.05 | 0.75±0.05 |

## EMBOSS PALSTIC TAPE SPECIFICATION

Unit : mm

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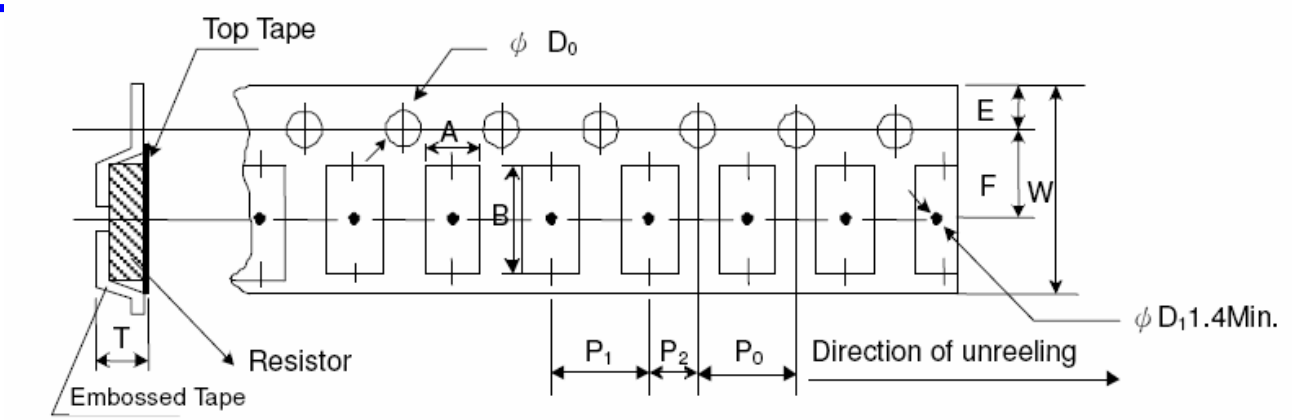
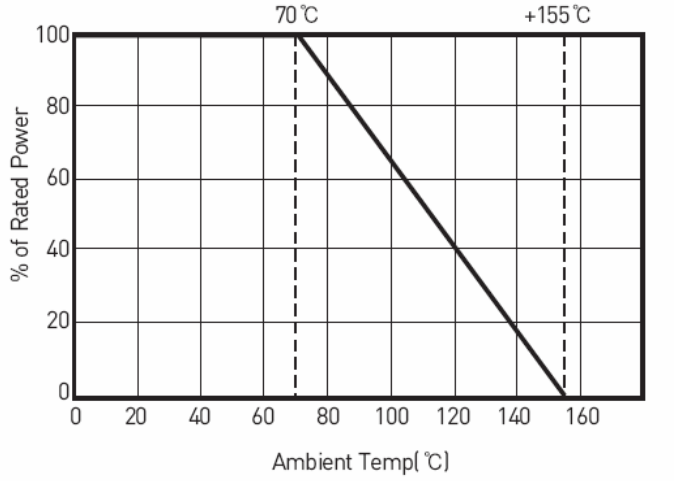



| Model | Dimensions[mm] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | W | E | F | P0 | P1 | P2 | ΦD0 | T |
| CSTN10 | 2.85±0.10 | 5.45±0.10 | 12.0±0.10 | 1.75±0.10 | 5.5±0.05 | 4.00±0.05 | 4.00±0.10 | 2.00±0.05 | 1.50±0.10 | 1.00±0.20 |
| CSTN12 | 3.40±0.10 | 6.65±0.10 | 12.0±0.10 | 1.75±0.10 | 5.5±0.05 | 4.00±0.05 | 4.00±0.10 | 2.00±0.05 | 1.50±0.10 | 1.00±0.20 |

## DERATING CURVE




## ORDERING PROCEDURE EXAMPLE